REMARKS

The rejection of claim 2 under 35 USC 112 is attended to by an amendment based on page 8, lines 7 to 19, of the specification, for example. The objections to claims 3, 5, 6 and 8 are also attended to above. The amendment to claim 8 and corresponding claims 18 to 21 are supported by page 8, lines 30 to 34, of the specification, for example. The amendments are non-narrowing so as not to invoke any present Festo decision.

The objection to claims 11 and 12 under 35 USC 112 is inappropriate, because the objection is only to the patentable weight they are given. However, corresponding new claims 16 and 17 are added to add patentable weight.

New limitations to a foamed tie layer and simultaneous extrusion described at page 8, lines 20 to 26, and page 3, lines 5 to 7, of the specification, for example, are added to claim 1 and corresponding new claim 15 to traverse the rejection under 35 USC 102 from the Stanley patent. Stanley does not disclose, teach or even hint features that the layer of foamed plastic is made of foamed melt processible adhesion plastic or that the tie layer and the innermost layer are extruded simultaneously against the base layer.

Stanley's pipeline comprises a tubular inner liner which has been pulled inside an underground sewer pipe. After that the foamable layer is foamed so that it expands against the sewer pipe.

Stanley's pipeline has disadvantage that the foam layer just lies against the inside wall of the pipe as well as against inner skin layer, as has been disclosed on column 5, lines 61 and 62. This kind of pipe structure, which has only loosely adhered skin, can cause serious risks for example in case of surge in the pipeline. Surge could cause the inner liner to collapse. Similarly a loosely adhered skin can collapse on long run due to water penetrating to the

interface.

The problem is solved in the invention by introducing a tie layer which has been made of foamed melt processible adhesion plastic and extruding the tie layer and the innermost layer simultaneously against the base layer.

The tie layer is a functional one which bonds or adheres or glues the base layer and the inner layer. As described on page 8, lines 30 and 31, the foamed tie layer sticks to the surface of the base layer. The bonding force is so high that the inside of the tie layer is allowed to shrink due to cooling but still the base layer and the innermost layer are bonded together. In this way has been reached much more durable and secure tubular product. In other words, the process of making innermost layer should receive lot of patentable weight.

Stanley has no indication pointing towards this kind of solution. Stanley teaches that the skin layer and the foamed layer could be made of basically same polymers (column 8, lines 9 to 12). Perhaps, if the material of the skin and foamed layer are suitably chosen, they could adhere to each other, but Stanley does not teach nor hint that this could take place. Actually, many of the plastics mentioned in D 1 are incompatible with each other and hence they do not adhere to each other.

Although materials of the skin and foamed layer has been chosen so that the layers could adhere to each other, the foamed layer does not stick to the surface of the base layer. The adhesion resulting from material coated on to another one would be merely of the Van de Waals type shown by many materials when clean material surfaces are united. The surfaces cling together during pipe manufacture but even then are expected to come apart easily afterwards. In case of Stanley's pipeline the inner surface of the pipe to be lined and the outer surface of the liner are not clean. Said surfaces are in contact with air or water (please note

figures 1, 2 and 4 and lines 4 to 6 and 43 to 47 of column 3, lines 30 to 32 of column 4) before the foaming take place. Air and water stain said surfaces, for example by oxygen attack. This hampers bonding of the foamed layer and the base layer in a very effective way. Contrary to this, the simultaneous extruding of the tie layer and the innermost layer against the base layer yields essentially better bonding, which is strengthen by adhesive properties of the tie layer.

Stanley discloses on column 9, lines 16 to 21 an example where both the skin layer and the foamable layer are made of polyethylene (PE). PE is a non polar material and it is very difficult to bond to anything, i.e. no effective glue exist. PE is not modified to an adhesion plastic with just foaming. Only in special cases where PE contains modified active end groups it becomes an adhesion plastic. An example is PE grafted with maleic anhydride. Stanley does not give any hint at importance of the quality of the adhesion or bond between the layers. Therefore Stanley is absolutely silent about modifying the foam plastic to exhibit adhesive properties. On column 9, lines 21 to 31, Stanley provides second example where liner consists of two skins (polypropylene, PP) and a foamed layer (polyvinyl chloride, PVC) there between. PP is a non polar material too and it is very difficult to bond to anything.

Bast does not disclose, teach or even hint features that the layer of foamed plastic is made of foamed melt processible (or thermoplastic) adhesion plastic or that the tie layer and the innermost layer are extruded simultaneously against the base layer.

Bast discloses a method for producing a corrugated pipe having a smooth lining of foam plastic. The foam plastic acts as an adhesive and a space filler between the corrugated pipe and a plastic liner. Bast teaches that the foam plastic is of thermosetting foamable plastics (see column 4, lines 55 to 68). It is well known that As thermosets are totally dif-

ferent group of material as melt processible plastics (thermoplastics) and processing and converting methods and products of thermosets are completely different from those of thermoplastics.

Bast's method for producing a corrugated pipe comprises steps wherein first the internal surface of the corrugated pipe is applied by plastic foaming mixture, and second, a sheet liner is pressed in the form of an expandable cylinder against the plastic foaming mixture. There is not even slightest hint to extrude something here, not to mention simultaneous extrusion of the tie layer and the innermost layer.

Donuiff, et al teach moldable crosslinked polyolefin foam made by silane-grafted polyethylene. PE is grafted in order to achieve a crosslinkable material. This has nothing to do with adhesion properties of the material.

Reconsideration and allowance are, therefore, requested.

Respectfully submitted,

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